IN THE CLAIMS:

1. (Previously presented) An implantable medical device, comprising:

means for sensing a plurality of events;

means for detecting whether there is an a sudden increase in the frequency of first events of the plurality of events corresponding to onset of a second event of the plurality of sensed events;

means for adjusting parameters associated with delivery of a therapy in response to the detected sudden increased frequency of first sensed events; and

means for delivering the therapy using the adjusted parameters, wherein the sudden increase in frequency of first events corresponds to an increase in frequency detected over a time period of up to approximately one minute.

2. (Original)The device of claim 1, wherein the first events correspond to premature atrial contractions and the means for detecting whether there is an increase in the frequency of first events determines whether a predetermined number of premature atrial contractions occur within a predetermined time window.

3. (Original) The device of claim 1, wherein the means for adjusting parameters associated with delivery of the therapy adjusts one of a rate of delivery of the therapy and a duration of delivery of the therapy at the adjusted rate.

4. (Original) The device of claim 1, further comprising:

means for determining, in response to an increase in the frequency of the first events not being detected, whether a predetermined number of the second event have occurred for which the therapy using the adjusted parameters has not been delivered; and

means for adjusting parameters associated with detecting whether there is an increase in the frequency of first events in response to the predetermined number of the second event not occurring.

5. (Original) The device of claim 4, wherein the first events correspond to premature atrial contractions and the means for detecting whether there is an increase in the frequency of first events determines whether a predetermined number of premature atrial contractions occur within a predetermined time window, and wherein the means for adjusting parameters associated with detecting an increase in the frequency of first sensed events adjusts one of the predetermined number of premature atrial contractions and the predetermined time window.

6. (Original) The device of claim 3, further comprising:

means for determining whether the second event is detected subsequent to delivery of the therapy; and

means for increasing the delivery rate of the therapy in response to the second event being detected.

7. (Original) The device of claim 3, further comprising:

means for determining whether the second event is detected subsequent to delivery of the therapy;

means for determining whether a predetermined number of the first event occur within a predetermined time period subsequent to delivery of the therapy; and

means for increasing one of the delivery duration and the delivery rate in response to the predetermined number of the first event occurring with the predetermined time period.

8. (Original) The device of claim 3, further comprising:

means for determining whether the second event is detected during delivery of the therapy; and

means for increasing one of the delivery duration and the delivery rate in response to the second event being detected during delivery of the therapy.

9. (Original) The device of claim 2, further comprising:

means for determining whether the therapy has been delivered a predetermined number of times;

means for determining whether the second event was detected subsequent to the delivery of the therapy; and

means for adjusting one of the number of premature atrial contractions and the time window in response to the second event not being detected subsequent to the delivery of the therapy.

10. (Original) The device of claim 3, further comprising:

means for determining whether the therapy has been delivered a predetermined number of times;

means for determining whether the second event was detected subsequent to the delivery of the therapy; and

means for adjusting one of the delivery duration and the delivery rate in response to the second event not being detected subsequent to the delivery of the therapy.

11. (Original) The device of claim 2, further comprising:

means for determining whether the therapy has been delivered more than a predetermined time threshold; and

means for adjusting one of the number of premature atrial contractions and the time window in response to the therapy being delivered more than the predetermined time threshold.

12. (Previously presented) A method of controlling delivery of therapy in an implantable medical device, comprising:

sensing a plurality of events;

detecting whether there is an a sudden increase in the frequency of first events of the plurality of events corresponding to onset of a second event of the plurality of sensed events;

adjusting parameters associated with delivery of the therapy in response to the detected sudden increased frequency of first sensed events; and

delivering the therapy using the adjusted parameters, wherein the sudden increase in frequency of the first events corresponds to an increase in frequency detected over a time period of up to approximately one minute.

13. (Original) The method of claim 12, wherein the first events correspond to premature atrial contractions and detecting whether there is an increase in the frequency of first events comprises determining whether a predetermined number of premature atrial contractions occur within a predetermined time window.

14. (Original) The method of claim 12, wherein adjusting parameters associated with delivery of the therapy comprises adjusting one of a rate of delivery of the therapy and a duration of delivery of the therapy at the adjusted rate.

15. (Original) The method of claim 12, further comprising:

determining, in response to an increase in the frequency of the first events not being detected, whether a predetermined number of the second event have occurred for which the therapy using the adjusted parameters has not been delivered; and

adjusting parameters associated with detecting whether there is an increase in the frequency of first events in response to the predetermined number of the second event not occurring.

16. (Original) The method of claim 15, wherein the first events correspond to premature atrial contractions and detecting whether there is an increase in the frequency of first events comprises determining whether a predetermined number of premature atrial contractions occur within a predetermined time window, and wherein adjusting parameters associated with detecting an increase in the frequency of first sensed events comprises one of adjusting the

predetermined number of premature atrial contractions and the predetermined time window.

17. (Original) The method of claim 14, further comprising:

determining whether the second event is detected subsequent to delivery of the therapy; and

increasing the delivery rate of the therapy in response to the second event being detected.

18. (Original) The method of claim 14, further comprising:

determining whether the second event is detected subsequent to delivery of the therapy;

determining whether a predetermined number of the first event occur within a predetermined time period subsequent to delivery of the therapy; and

increasing one of the delivery duration and the delivery rate in response to the predetermined number of the first event occurring with the predetermined time period.

19. (Original) The method of claim 14, further comprising:

determining whether the second event is detected during delivery of the therapy; and

increasing one of the delivery duration and the delivery rate in response to the second event being detected during delivery of the therapy.

20. (Original) The method of claim 13 further comprising:

determining whether the therapy has been delivered a predetermined number of times;

determining whether the second event was detected subsequent to the delivery of the therapy; and

adjusting one of the number of premature atrial contractions and the time window in response to the second event not being detected subsequent to the delivery of the therapy.

21. (Original) The method of claim 14, further comprising:

determining whether the therapy has been delivered a predetermined number of times;

determining whether the second event was detected subsequent to the delivery of the therapy; and

adjusting one of the delivery duration and the delivery rate in response to the second event not being detected subsequent to the delivery of the therapy.

22. (Original) The method of claim 13, further comprising:

determining whether the therapy has been delivered more than a predetermined time threshold; and

adjusting one of the number of premature atrial contractions and the time window in response to the therapy being delivered more than the predetermined time threshold.

23. (Previously presented) A computer-readable medium having computer-executable instructions for performing a method, comprising:

means for sensing a plurality of events;

means for detecting whether there is an a sudden increase in the frequency of first events of the plurality of events corresponding to onset of a second event of the plurality of sensed events;

means for adjusting parameters associated with delivery of the therapy in response to the detected sudden increased frequency of first sensed events; and

means for delivering the therapy using the adjusted parameters, wherein the sudden increase in frequency of the first events corresponds to an increase in frequency detected over a time period of up to approximately one minute.

24. (Previously presented) A method of controlling delivery of therapy in an implantable medical device, comprising:

sensing a plurality of events;

detecting whether there is a sudden increase in the frequency of first events of the plurality of events corresponding to onset of a second event of the plurality of sensed events;

adjusting parameters associated with delivery of the therapy in response to the detected increased frequency of first sensed events; and

delivering the therapy in response to the detecting of the sudden increase in the frequency of first events, wherein the sudden increase in frequency of the first events corresponds to an increase in frequency detected over a time period of up to approximately one minute, and the first events correspond to premature atrial contractions.